



DEPARTMENT OF THE ARMY  
PORTLAND DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 2946  
PORTLAND, OREGON 97208-2946

Reply to  
Attention of:

May 15, 2001

Hydraulics, Hydrology and Geotechnical Design

Dear Willamette Valley Water Users:

Enclosed are the 2001 summer and fall operational plans for the thirteen Federal multi-purpose flood control projects in the Willamette River Valley. The U.S. Army Corps of Engineers has assembled the plans, in consultation with Federal and State water resource and fishery agencies.

These operational plans are consistent with measures to protect fish species listed under the Endangered Species Act. Given the extremely dry conditions we are experiencing this water year, this plan attempts to balance water shortages among the various purposes. Due to lack of inflow, most of the projects in the Willamette will not refill this year. No single purpose will receive its full share of stored water this year. The Corps will continue to closely monitor hydrologic conditions in the Willamette Valley as they develop in cooperation with the other water resource and fishery agencies.

If natural flows, irrigation demands, fishery needs or the hydroelectric power situation should differ significantly from our assumptions, it may be necessary to modify the actual operations as the season progresses. Significant changes will be coordinated with Federal, State and local entities.

We would like to thank the agencies that work in cooperation with the Corps of Engineers to produce the best possible water management plan for the Willamette Valley during this extremely difficult year. If you have any questions or comments, please contact Mr. Roger Ross, Reservoir Regulation and Water Quality Section at (503) 808-4886.

Sincerely,

A handwritten signature in dark ink, appearing to read "Howard B. Jones", is written over the typed name.

Howard B. Jones, P.E.  
Chief, Engineering and Construction  
Division

Enclosures

## 2001 Plan for the Willamette Conservation Release Season

1. General. Water year 2001 has been and is forecast to continue to be one of the most extreme low-flow years on record. Although normal operations will not be possible, the Willamette River reservoir projects will be operated for flood control, hydropower, irrigation, and navigation purposes, while augmenting river levels and downstream flows for recreation, fishery purposes and pollution control. Willamette projects will operate in 2001 to comply with the Endangered Species Act (ESA).

2. Conservation Release Season Objectives. During this extreme low-flow year the overall objectives for project operations have shifted. Analysis to date has shown that the various project purposes will not be fully met this conservation season. This plan strikes a balance among the various purposes and spreads the shortages that will be experienced in the Willamette over all of the purposes.

a. The overriding goal is to efficiently use the stored water to minimize the impacts that the Willamette Basin will experience as a result of the low-flow conditions that have occurred and are forecast to continue. Towards this end, water releases will be managed to meet a variety of flow targets as outlined below. Planned releases should fully utilize conservation storage by 1 October. After 1 October the Willamette project should use storage below minimum conservation pool, if needed, to meet downstream flow targets. This objective is consistent with the BPA's request that exclusive power storage not be used until after 1 October and balances risks among early and late flow targets this conservation season.

b. Real-time operations should maximize beneficial effects and minimize adverse effects on biological conditions in the Willamette Basin, tributaries and mainstem. Due to the limited low-flow conditions, short-term manipulation of the hydrologic regime is beneficial and indeed necessary to meet flow targets. Day-to-day operation should mimic natural hydrographs when practicable. That is, relatively rapid rises and slower recession of the hydrograph. Of particular concern is the need to limit rapid recession whenever possible. This will limit the exposure of instream and riparian organisms to potentially damaging de-watering of habitat. The Corps will continue discussions with agency representatives to determine specific requirements.

### 3. Adaptive Management Approach.

a. Given the extreme conditions this year an adaptive management approach for project conservation season operations is critical to the overall success of this plan. The Corps will continue to consult with the various federal and state agencies via a weekly telephone conference each Wednesday. Monthly, face-to-face meetings are scheduled as well. The purpose of these meetings is to continue to assess the hydrologic situation as it develops and make changes to this plan accordingly.

b. Key to this adaptive management approach is the close monitoring of remaining conservation storage above Salem and Albany. Figures 1 and 2 represent the range of total storage above these control points that has a 50 percent probability of occurring over the

upcoming conservation season. This “band” of remaining storage will be used as overall system drawdown limits. The Corps will manage releases so that remaining storage falls within this band if possible. If the hydrologic situation causes remaining storage to fall too low within the band, then the Corps will consult with the other agencies and make appropriate changes to downstream flow objectives. This will ensure that the Corps is able to meet the various flow requirements as outlined below through the efficient use of stored water in the system.

4. Assumptions. Several assumptions were made to formulate the proposed lake elevation and flow targets presented in this plan. They include:

a. Natural flows in the Willamette River basin are forecast to be at 64 percent of average during the April – September time period, based on the joint Natural Resource Conservation Service (NRCS)/National Weather Service (NWS) 70 percent exceedance final April forecast at Salem. Streamflows in the Willamette Basin since January have been well below average.

b. Due to the extremely dry conditions experienced this winter and spring most reservoirs will not refill this year. Priority of refill is given to Foster, Dorena and Fern Ridge. It is likely that Foster and Dorena will refill based on the most current forecast.

c. Project minimum outflows are met according to Table 1. These are the minimum releases the projects will make over the upcoming conservation season.

*Table 1 – Minimum Project Outflows*

Month	Hills Creek	Lookout Point-Dexter	Fall Creek	Cottage Grove	Dorena	Cougar	Blue River	Fern Ridge	Detroit-Big Cliff	Green Peter	Foster
May	300	1,100	30	50	100	300	50	30	900	50	800
June	300	1,100	30	50	100	300	50	30	900	50	800
July	300	1,100	30	50	100	300	50	30	900	50	750
August	300	1,100	30	50	100	300	50	30	900	50	650
September	300	1,100	30	50	100	300	50	30	900	50	700
October	300	1,100	30	50	100	300	50	30	900	50	700

d. Target flows at Albany and Salem are met according to Table 2. Targets during April through June are computed as 14-day running averages.

Instantaneous flows at Albany should not drop below 4,000 cfs for July through October. Targets during July through October will be sufficiently in excess of 4,000 cfs to ensure meeting this instantaneous minimum requirement.

Table 2 – Flow Targets at Albany and Salem

Date	A L B A N Y		S A L E M	
	Normal Full Flow Target (cfs)	Planned 2001 Flow Target (cfs)	Normal Full Flow Target (cfs)	Planned 2001 Flow Target (cfs)
1-15 April	n/a	n/a	20,500	13,000 - 20,500
16-30 April	n/a	n/a	17,800	15,000
May	n/a	n/a	15,000	15,000
1-15 June	n/a	n/a	13,000	5,000
16-30 June	n/a	n/a	8,700	5,000
July	4,500	4,000	6,000	5,000
1-15 August	5,000	4,000	6,000	5,000
16-30 August	5,000	4,000	6,500	5,000
September	5,000	4,000	7,000	5,000
October	n/a	4,000	n/a	5,000

Instantaneous flows at Salem should not drop below 13,000 cfs through May and should not drop below 5,000 cfs during June through October. The Corps will use 15,000 cfs as the flow objective in May when using three-day projections to plan releases from the projects. Targets during July through October will be sufficiently in excess of 5,000 cfs to ensure meeting this instantaneous minimum requirement.

e. There is a 75 percent probability that power projects will not be drafted below Minimum Conservation Pool before 1 October. The operational goal is to prudently use all conservation storage by the 1 October target date. Power generated during drawdown will be marketable.

f. Flow objectives and project scenarios were derived with input from Federal agencies including the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), the Bonneville Power Administration (BPA), U.S. Bureau of Reclamation (USBR) and the U.S. Forest Service (USFS). Additionally, input from various State agencies including the Oregon Water Resources Department (OWRD), the Oregon Department of Fish and Wildlife (ODFW), the Oregon Department of Environmental Quality (ODEQ), the Oregon Department of Agriculture (ODA), the Oregon State Marine Board (OMB) and the Oregon Parks and Recreation Department, as well as various local municipalities was used in the formulation of this years operating plan. This interagency coordination process has been on-going since January 2001. In addition, public meetings held at Eugene/Springfield, Sweet Home and Stayton were conducted in March and April to solicit input from the public.

5. Operations at Individual Projects. The normal priority of refill and drawdown at the projects cannot be met during this extremely dry year. The overall priority of drawdown will be as follows: Detroit, Green Peter, Blue River, Lookout Point, Hills Creek, Cougar, Fall Creek, Dorena, Cottage Grove, Foster, Fern Ridge. Storage above Albany in the Coast Fork, Middle Fork and McKenzie basins needs to generally be preserved for use later in the summer to meet flow requirements at Albany.

a. The primary objective at Lookout Point/Dexter is to save storage during the spring in order to help meet later flow requirements at Albany. Some storage may be used in the spring based on the hydrologic situation. See figure 3 for likely lake elevations over the upcoming conservation season. The orange band represents the range of elevations that have a 50 percent probability of occurrence over the upcoming conservation season based on the final April forecast. Early forecasts indicated that there was little likelihood that Lookout Point would be able to refill this year. Accordingly, operations to refill Lookout Point from 15 June until 15 July for Oregon Chub in Hospital Pond adjacent to the reservoir were foregone. The Corps of Engineers is pursuing temporary and permanent structural remedies so that Hospital Pond can provide Oregon Chub habitat without maintaining a full pool at Lookout Point through 15 July. To ensure Oregon Chub habitat downstream from the project remains viable this season, minimum outflows below Dexter are increased to 1,100 cfs for the remainder of the season.

b. The objective at Hills Creek is also to save storage early in the season, but may be used to meet spring targets. Later in the season its stored water will be used to meet minimum outflows below Lookout Point. Per coordination with the OWRD, minimum outflows from Hills Creek are reduced to 300 cfs. See figure 4 for likely lake elevations.

c. Fall Creek storage will be used as needed to meet spring flow targets, but will mainly be preserved to meet summer flow targets at Albany. In coordination with the ODFW, outflows from 30 to 150 cfs will be released to support steelhead migration and collection. See figure 5 for likely lake elevations.

d. Cottage Grove will mostly be used to meet minimum outflows in the spring and then drafted in late summer to help ensure Albany flow targets are met. See figure 6 for the range of likely lake elevations over the upcoming season.

e. Dorena will help provide summer flows at Albany and ensure minimum flows are met in the Row River and Coast Fork Willamette later in the season. See figure 7 for likely lake elevations over the upcoming season.

f. Fern Ridge will not be used to augment mainstem flows. Storage here will be used to meet minimum flow requirements at Monroe to ensure irrigation contracts are met. The OWRD has agreed to reduce minimum outflows to 30 cfs in April and May towards this end. See figure 8 for likely lake elevations.

g. Cougar will generally hold storage early and it will be used to meet summer flow requirements at Albany. See figure 9 for the range of likely lake elevations.

h. Blue River storage will be used early in the season to meet flow requirements at Salem. Later in the season it will primarily be used to maintain minimum outflows. See figure 10 for the range of likely lake elevations.

i. Green Peter storage will also be used earlier in the season to help meet flow requirements at Salem and to refill Foster. This is necessary to preserve required storage above Albany. See figure 11 for likely lake elevations.

j. Foster storage will not be used to meet flow targets on the mainstem Willamette. Foster will be kept at elevation 614 feet to facilitate the downstream passage of native winter steelhead smolts until mid-May. It will be refilled to elevation 637 feet by Memorial Day weekend using storage from Green Peter. Given the small amount of storage space available at Foster and operations at Green Peter directly upstream, it is likely that Foster will remain full until after Labor Day weekend (see figure 12).

k. Detroit storage will also be used first this season to help meet flow requirements at Salem. Again, this is necessary to preserve storage above Albany for use later in the season. See figure 13 for the range of likely lake elevations.

Figure 1 – Total Conservation Storage Above Salem

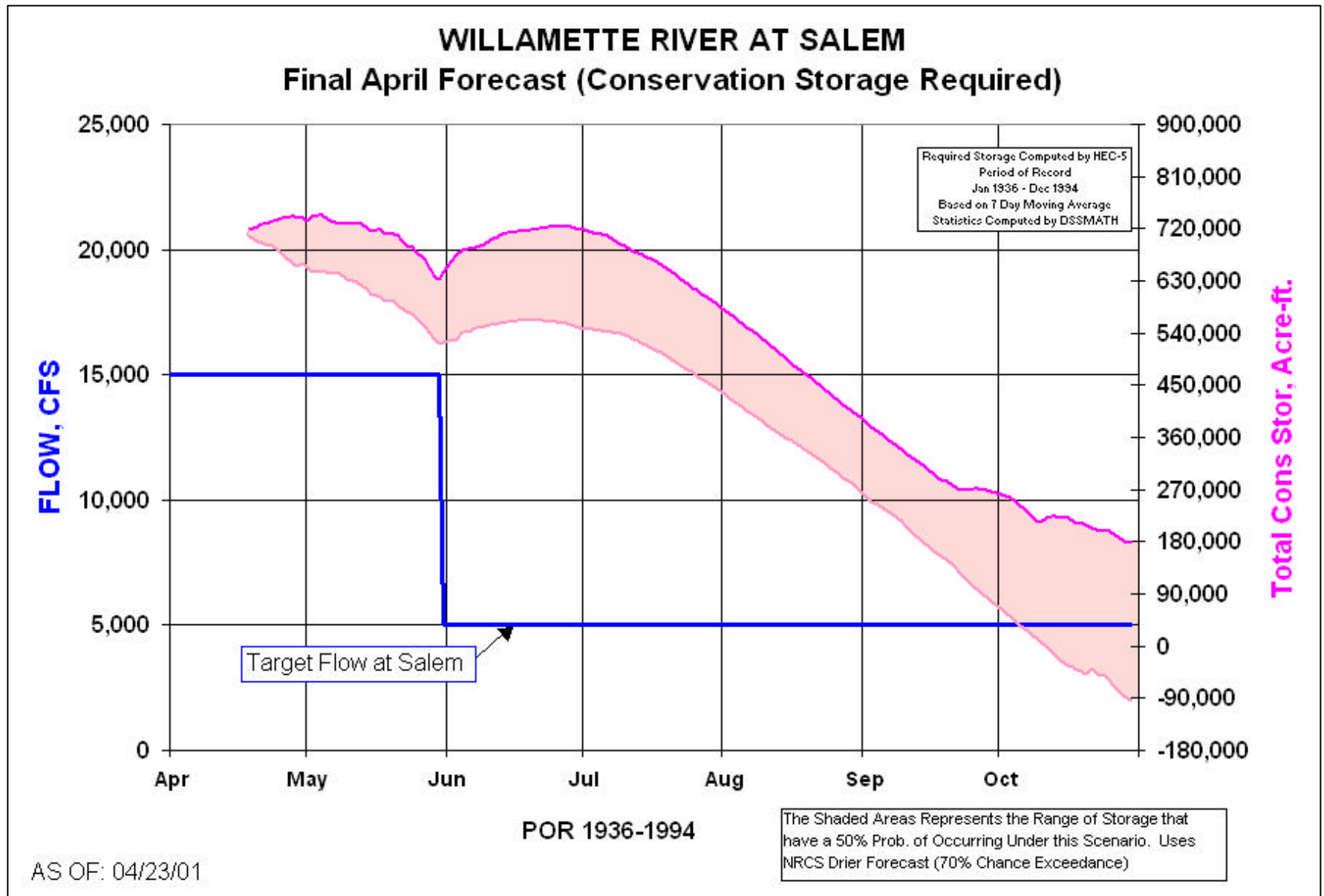


Figure 2 – Total Conservation Storage Above Albany

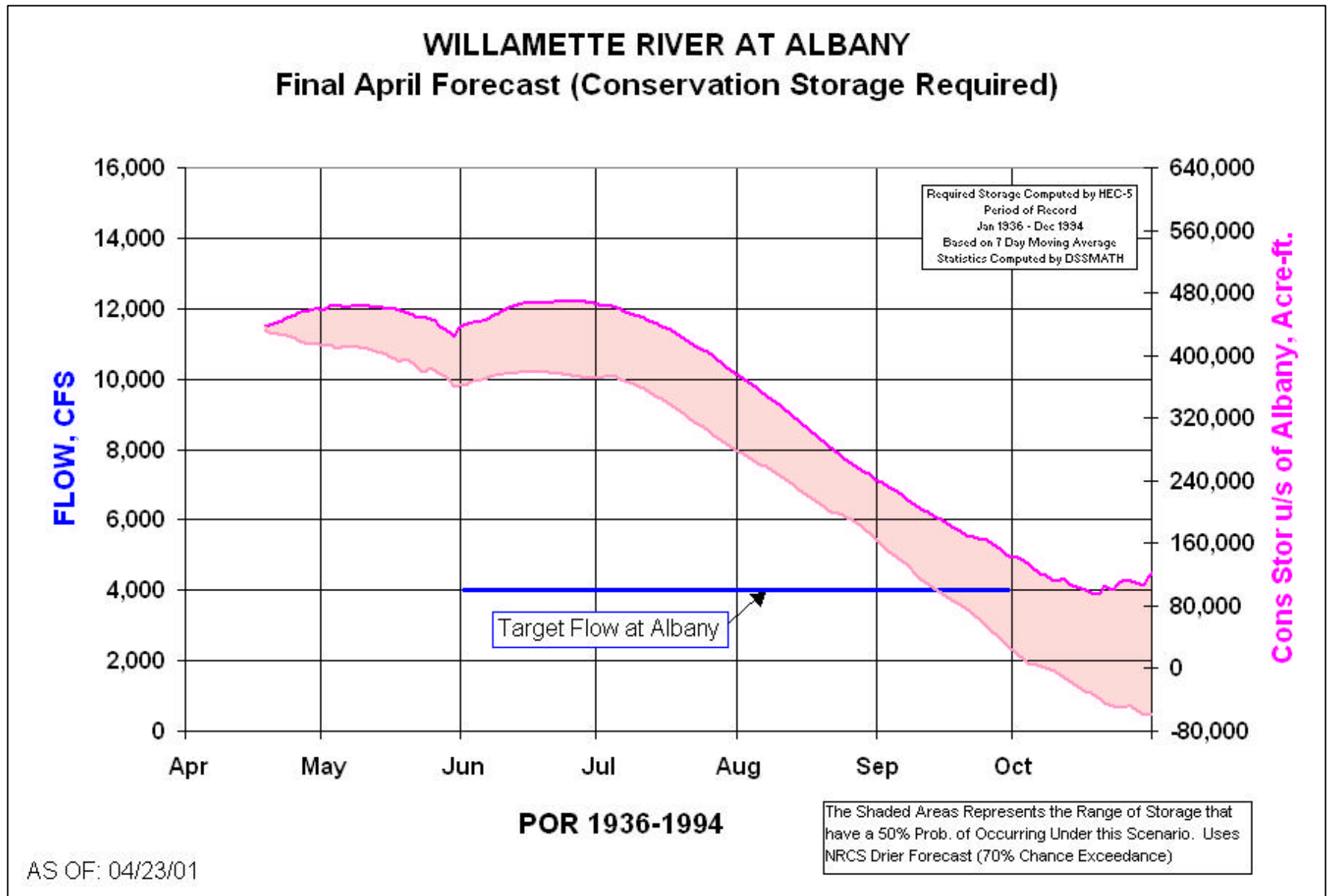




Figure 3 – Forecast Elevation Range at Lookout Point Reservoir (50% Probability Band)

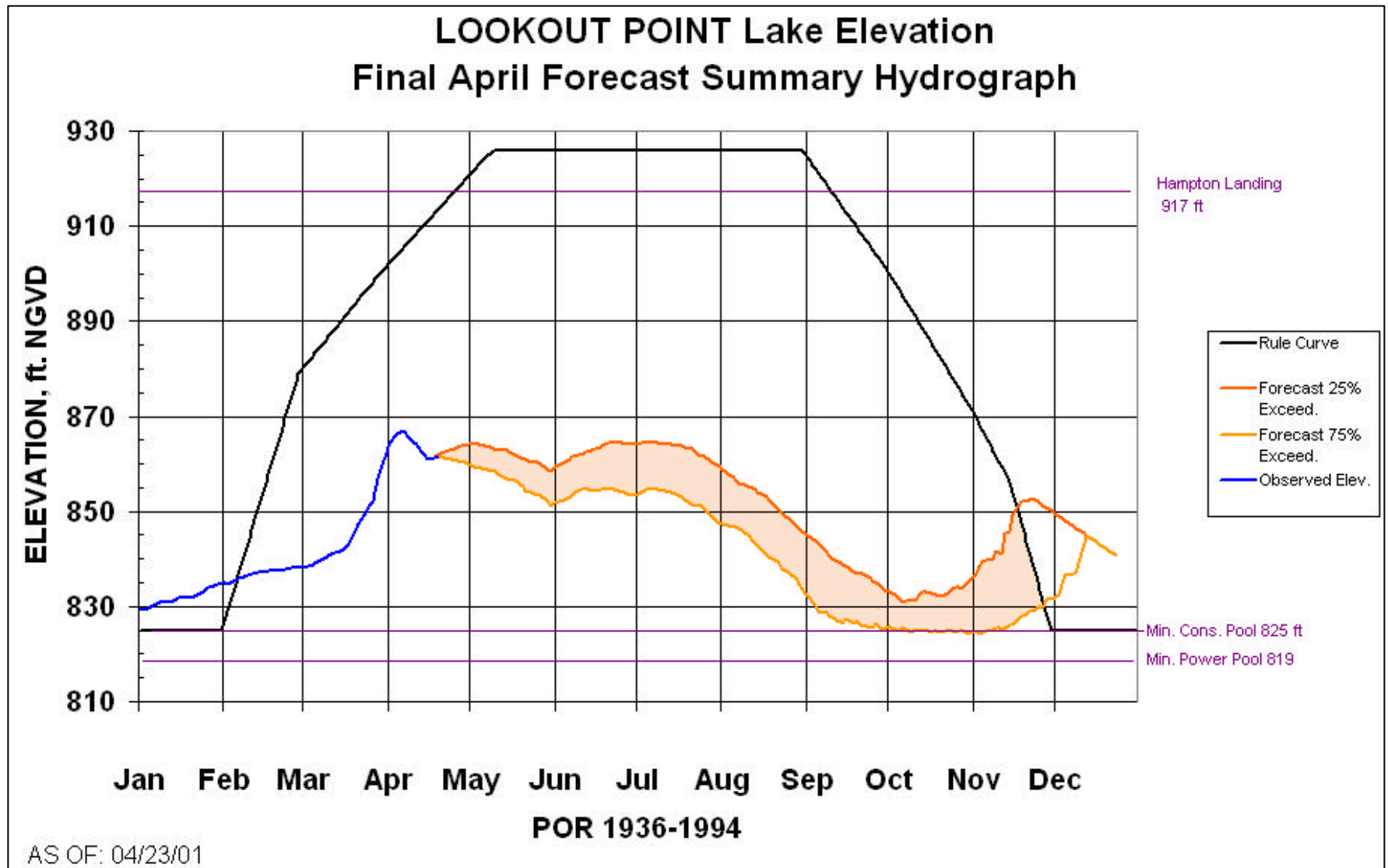


Figure 4 – Forecast Elevation Range at Hills Creek Reservoir (50% Probability Band)

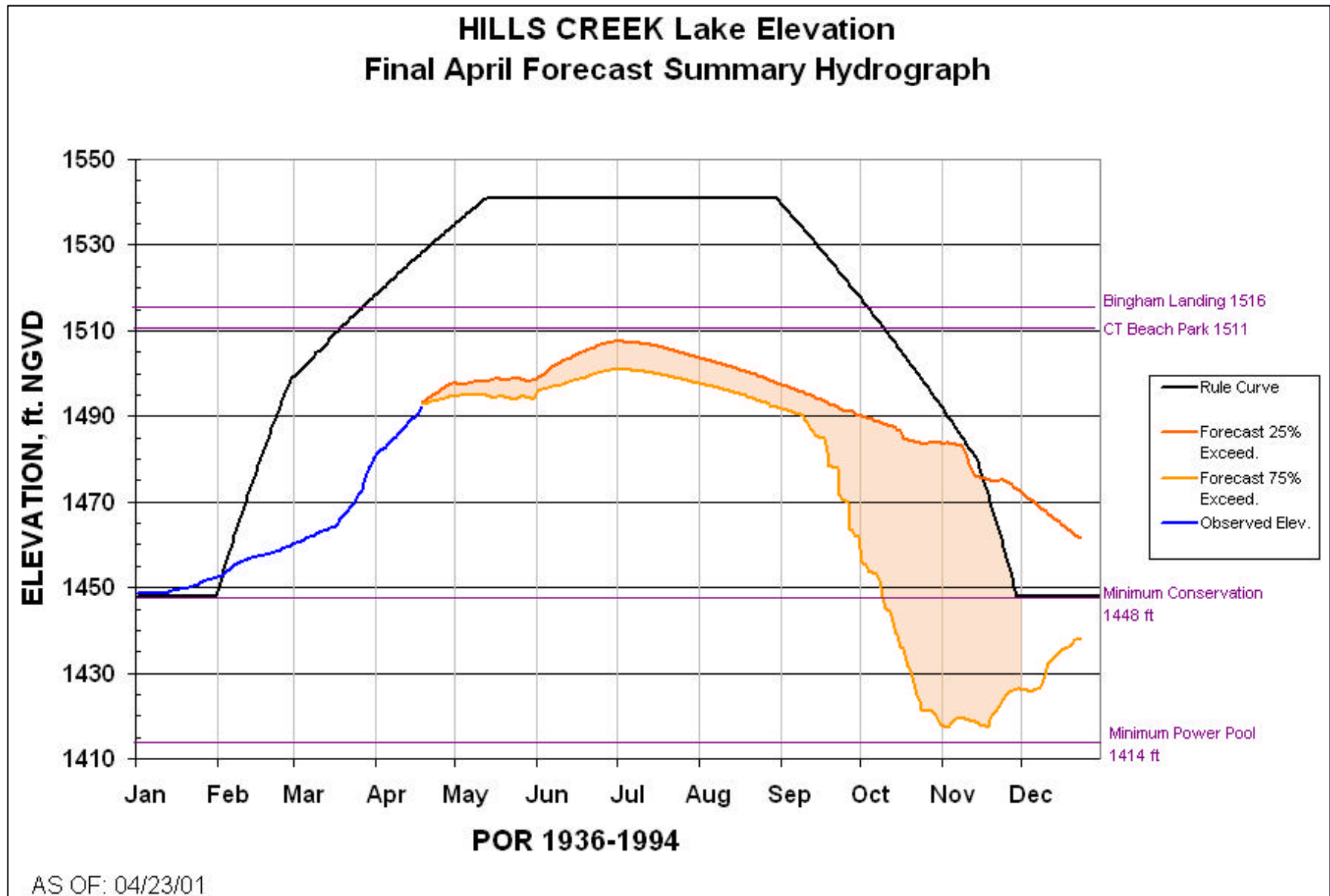


Figure 5 – Forecast Elevation Range at Fall Creek Reservoir (50% Probability Band)

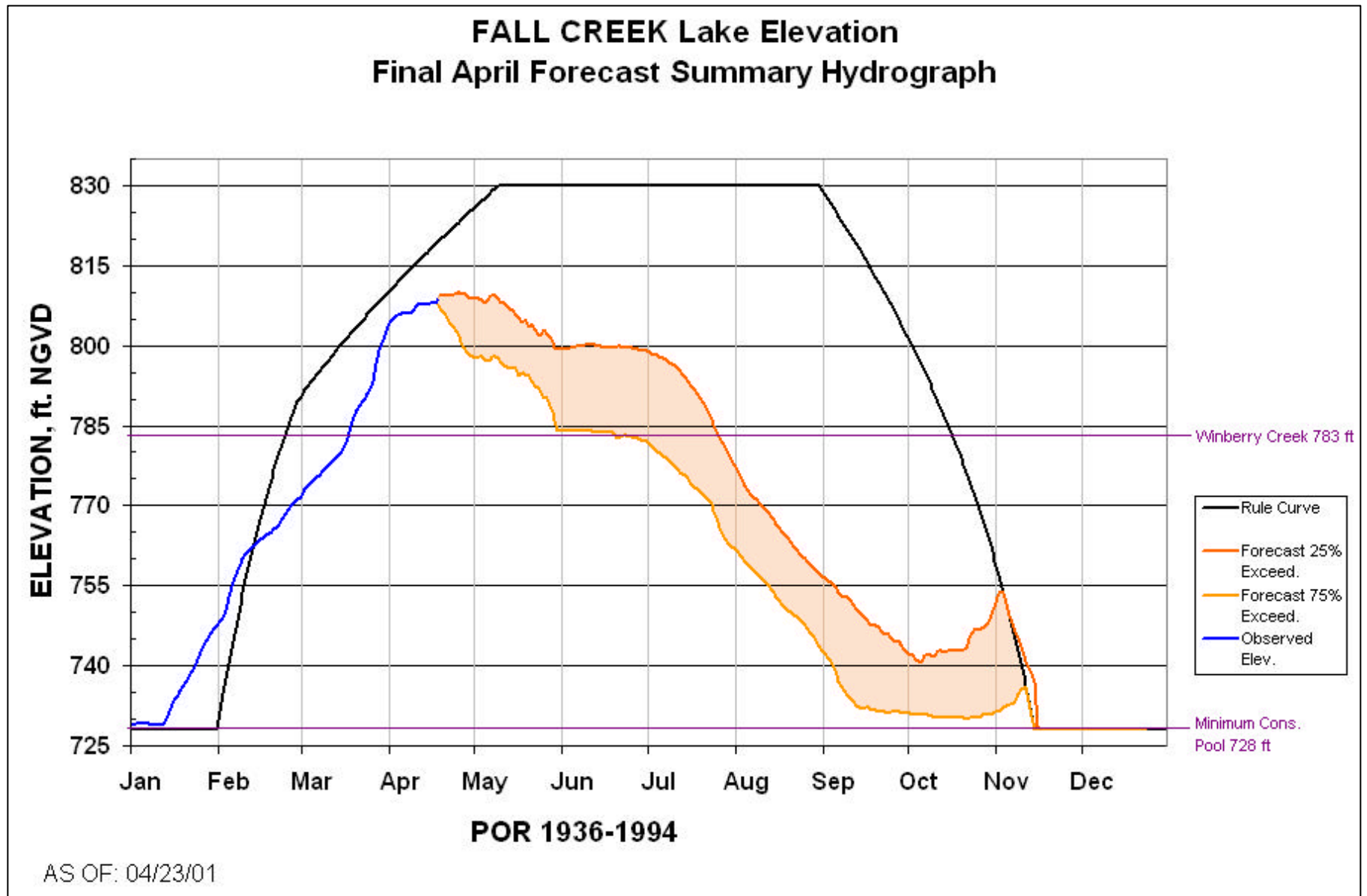


Figure 6 – Forecast Elevation Range at Cottage Grove Reservoir (50% Probability Band)

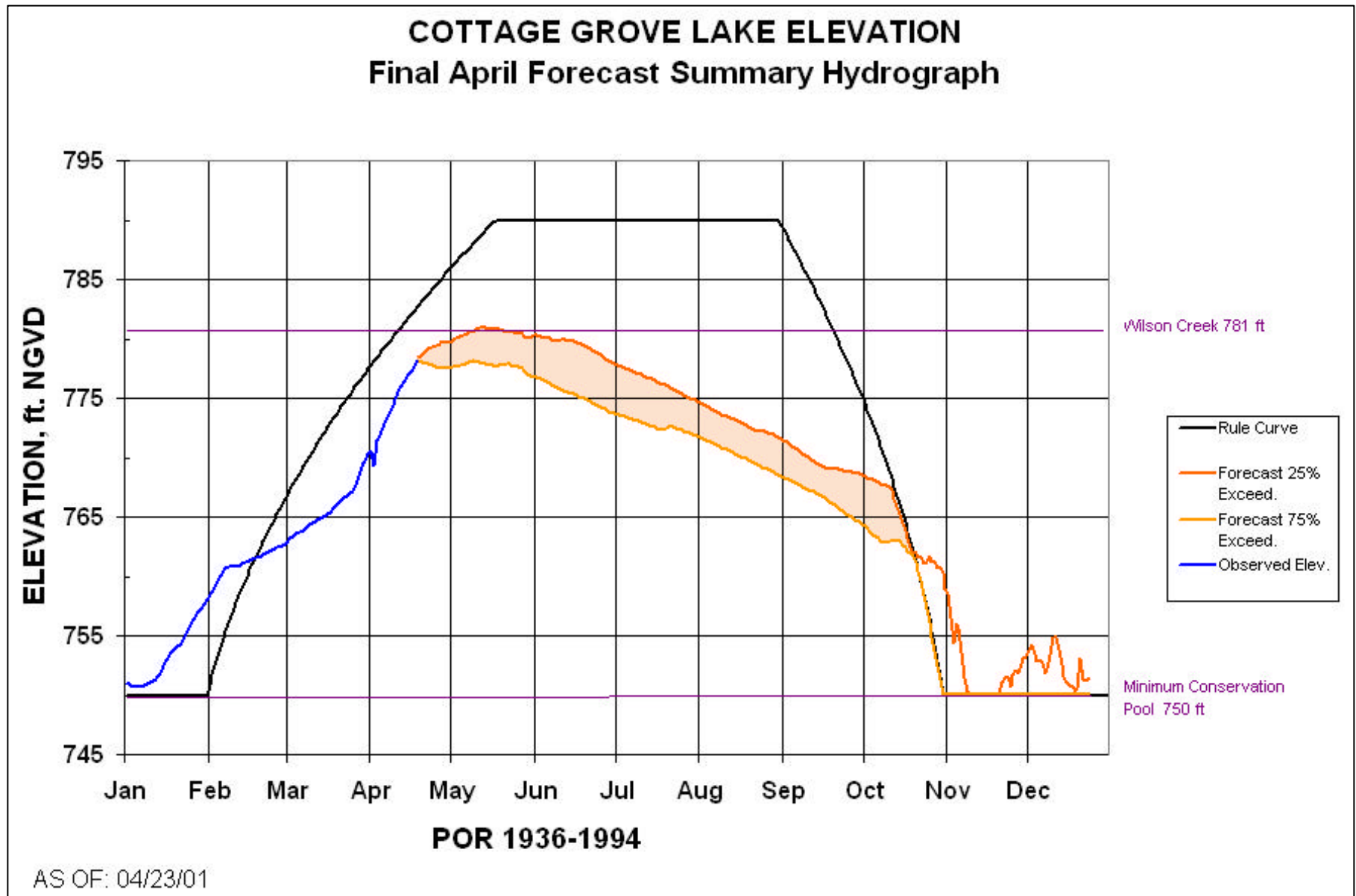


Figure 7 – Forecast Elevation Range at Dorena Reservoir (50% Probability Band)

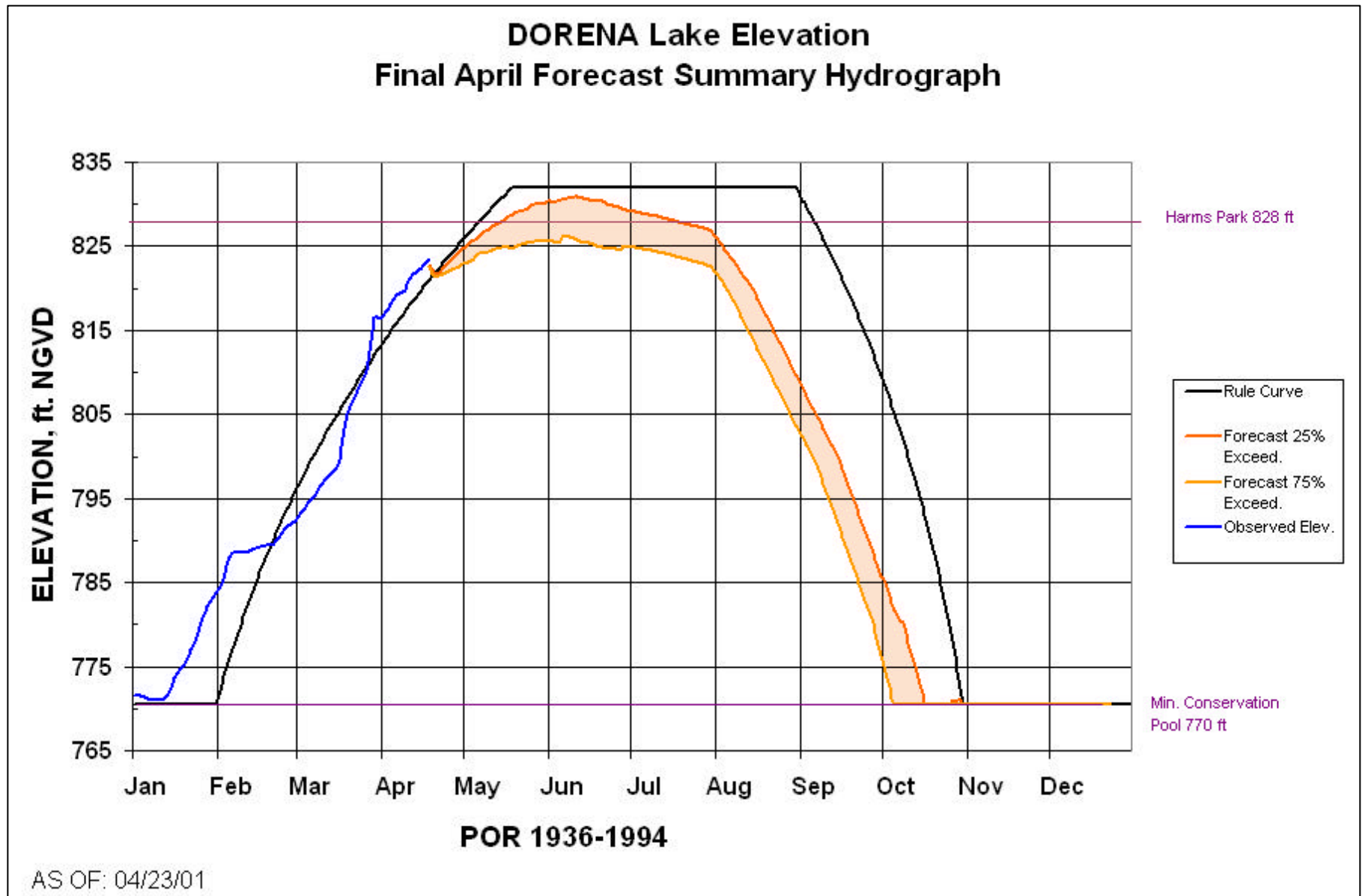


Figure 8 – Forecast Elevation Range at Fern Ridge Reservoir (50% Probability Band)

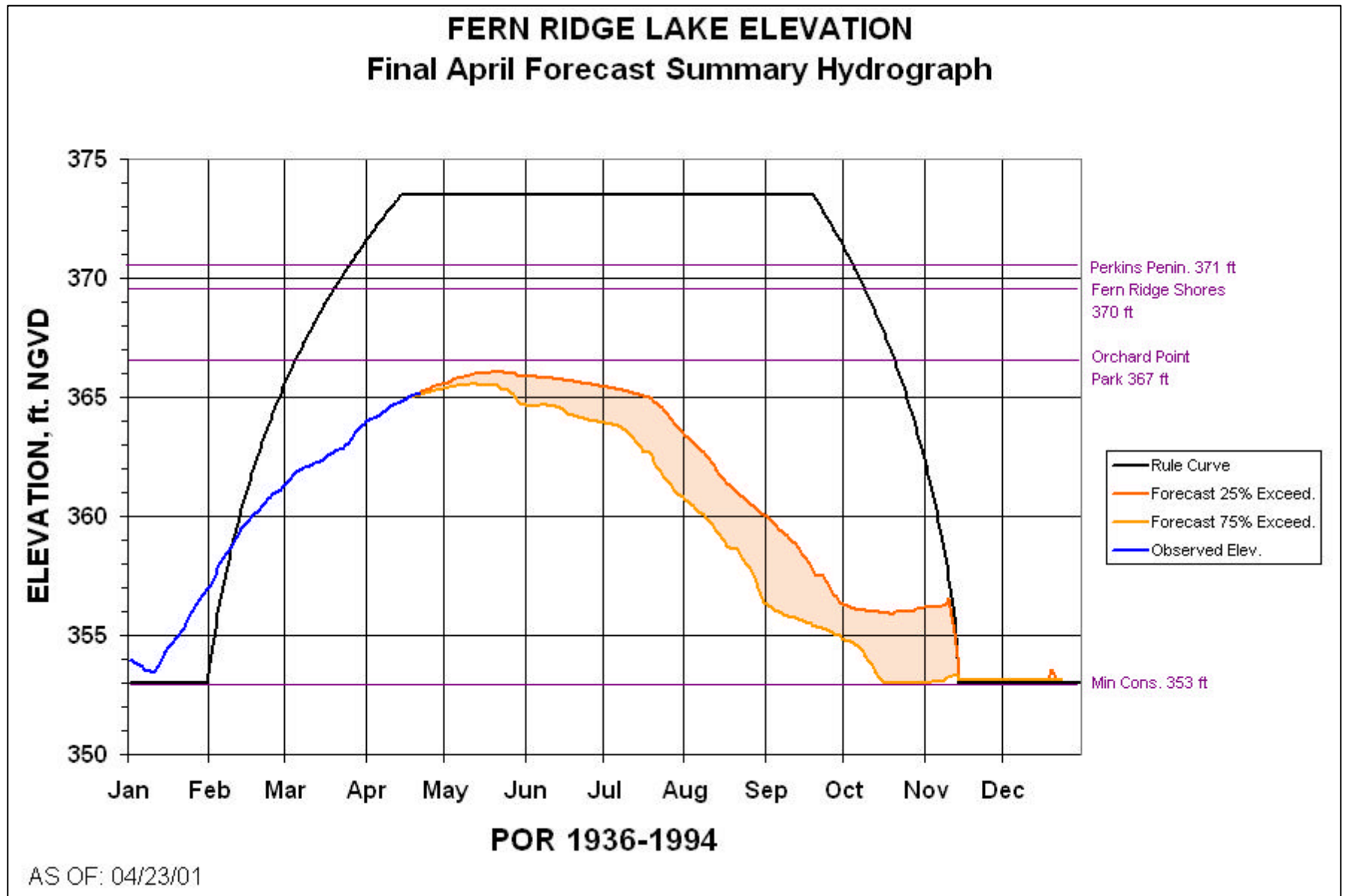


Figure 9 – Forecast Elevation Range at Cougar Reservoir (50% Probability Band)

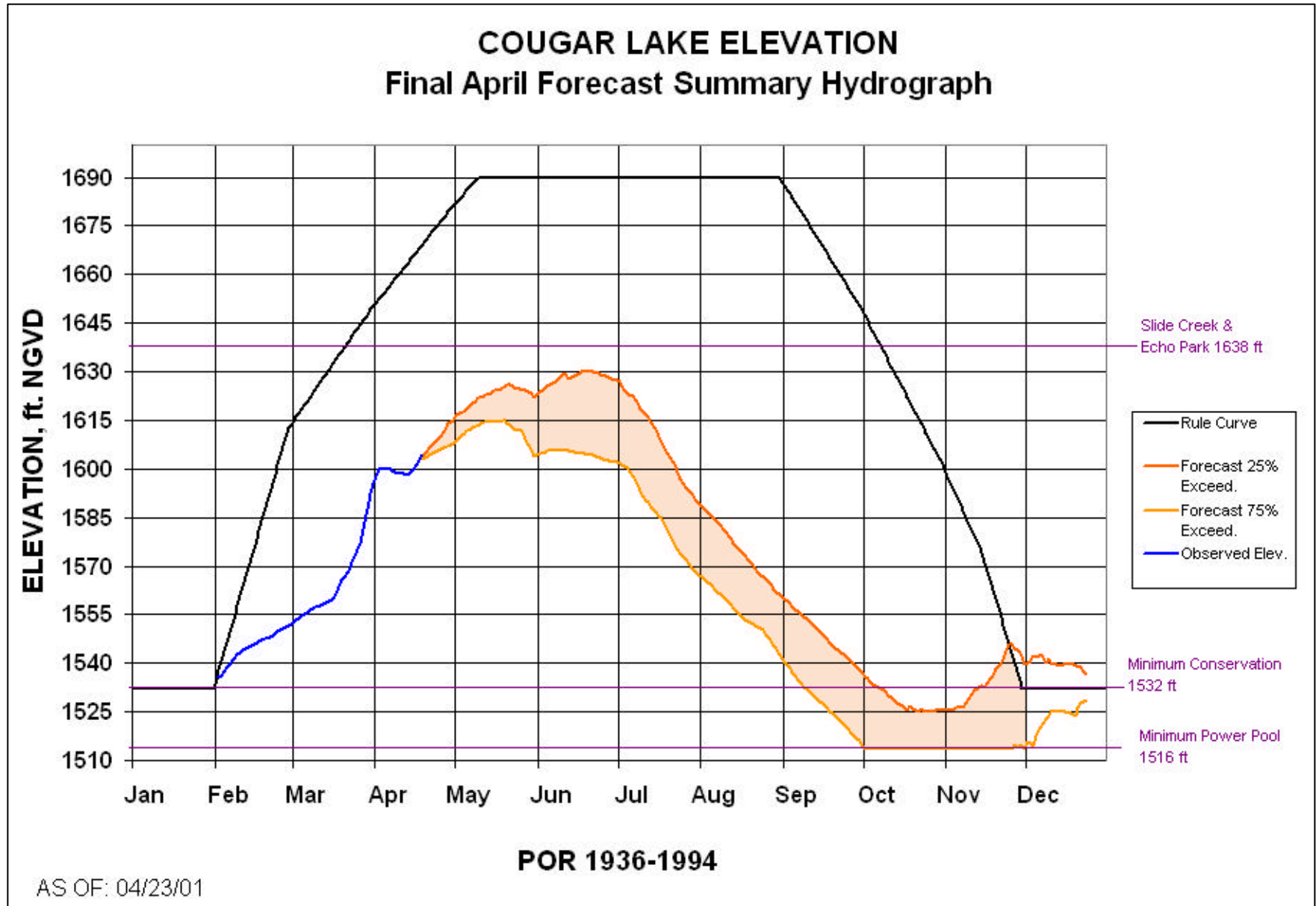




Figure 10 – Forecast Elevation Range at Blue River Reservoir (50% Probability Band)

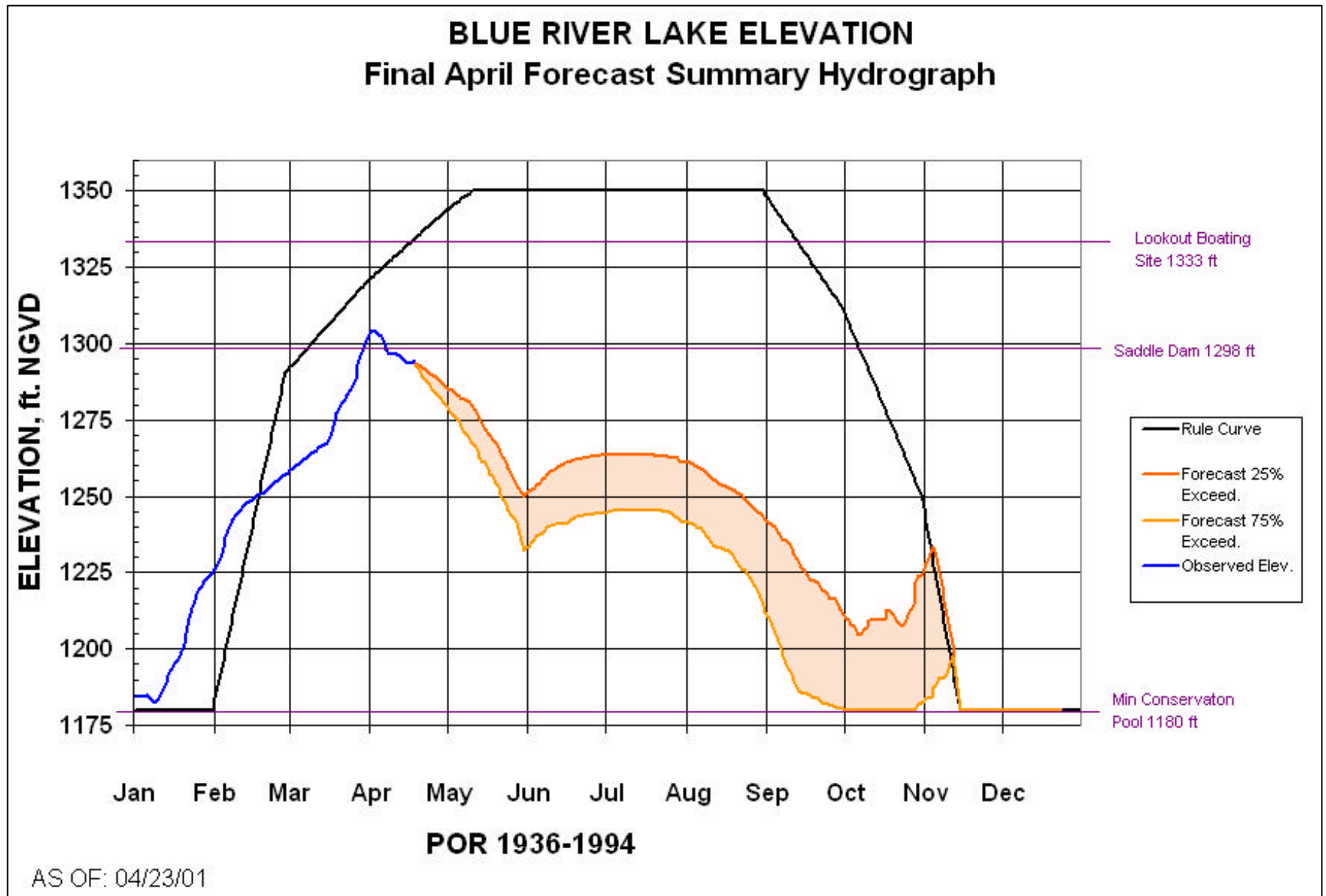




Figure 11 – Forecast Elevation Range at Green Peter Reservoir (50% Probability Band)

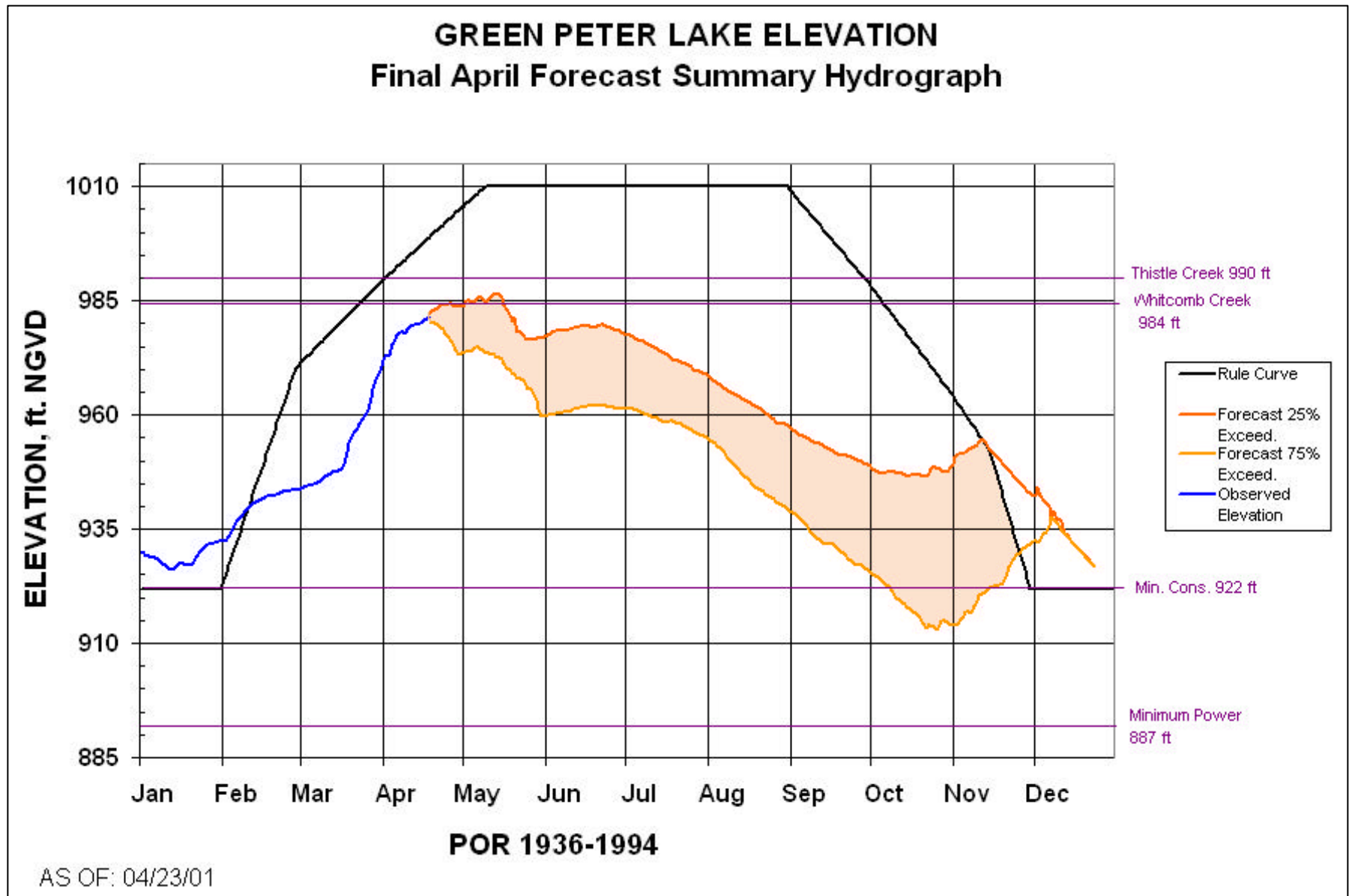


Figure 12 – Forecast Elevation Range at Foster Reservoir (50% Probability Band)

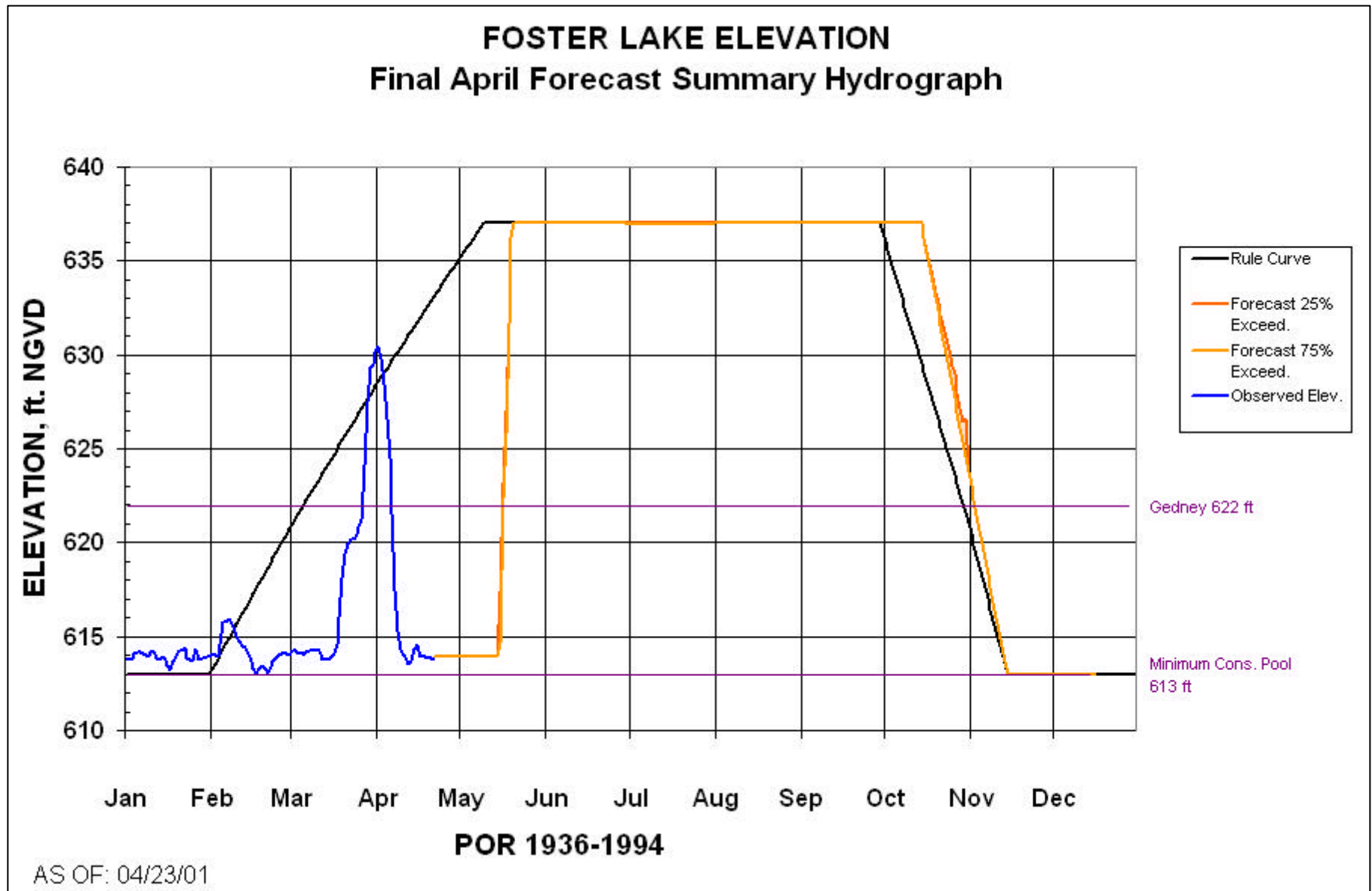


Figure 13 – Forecast Elevation Range at Detroit Reservoir (50% Probability Band)

